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A Method of Isolating and Counting Gas Producing Bacteria in Milk

C. H. Eckles

A METHOD OF ISOLATING AND COUNTING GAS PRODUCING BACTERIA IN MILK.

BY C. H. ECKLES.

It is a well known fact that more or less gas producing bacteria are present in almost all ordinary milk. The number present varies with the season of the year and the treatment the milk has received.

This class of ferments is of considerable importance on account of the relation it bears to cheese making.

Practical men have long considered the development of gas during the process of cheese making as a serious impediment to the production of the desired quality. This view has been largely sustained by scientific investigation. The bacteria which produce this gas mostly belong to, or are closely allied to the colon group. The gas is produced from the decomposition of the milk sugar and is generally composed of about one-third carbon dioxide and two-thirds explosive gas, probably hydrogen.

During the past two years the writer has had occasion to determine the number of gas producing germs in a large number of milk samples, and during this work developed the following method: Agar is made up according to the usual methods and treated with a normal solution of sodium hydroxide until neutral to phenolphtalein. After filtering, 2 per cent of lactose is added. The milk is diluted by adding a measured amount to a known volume of sterile water. A sterile pipette is used to measure a small portion of this diluted milk into the melted agar, which is poured into a Petri dish in the usual manner. After it has solidified, a second tube of melted agar is found on top of the first one. This covers all the bacteria added in the first tube. As the growth develops, gas is produced, which

shows itself by forming a bubble in the medium surrounding the colony. As all colonies are below the surface, the number of gas bacteria present in the amount of milk taken will be represented by the number of bubbles appearing. If it is desired to make sub-cultures of the gas bacteria it may be done in the usual manner, with the advantage of being able to secure the right one at once.

One chance for error has been noted. This comes from having too many colonies crowded on the Petri dish, when some of the gas germs will not develop sufficiently to show a bubble. The trouble may be avoided by sufficient dilution. While no exact limit can be set, it seems advisable to have not more than 300 to 500 colonies on a Petri dish.

Although the writer has made no trials, it would appear that this method might be useful in isolating and counting gas producing bacteria in the examination of water suspected of sewerage contamination.

THE TOTAL SOLAR ECLIPSE OF MAY 28, 1900.

OBSERVED AT WADESBORO, N. C.

BY DAVID E. HADDEN.

A total eclipse of the sun is always one of the grandest and most awe-inspiring of all natural phenomena. To the superstitious and unenlightened people of India, Africa and the islands of the sea it is a phenomenon full of terror because of the belief that some great hideous monster is devouring the orb of day, but to the astronomer and scientist it is of such interest and importance that governments, colleges, societies and individuals send out expeditions equipped with costly instruments, over land and sea—literally to the ends of the earth—to locate within the track of the shadow.